the guard from the meandring impressions of blood-vessels observable on the surface of some specimens; but the presence of a calcareo-corneous capsule or sheath investing the guard, and expanding into a horny receptacle, has not till now been demonstrated.

The author considers the facts described as proving that the cephalopod of the Belemnite was entirely distinct from the Belemnoteuthis; and that the muscular mantle, cephalic arms, and other parts referred by Professor Owen to the former, exclusively belong to the latter genus.

He concludes that the remains of at least three genera of naked Cephalopoda occur in the argillaceous deposits of the oolite in Wiltshire; namely, the first or true *Calamary*, with a horny dorsal gladius or pen; the second, the *Belemnoteuthis*, or a decapod with uncinated cephalic arms, ink-bag, pallial fins, and a corneo-calcareous phragmocone; and the third, the *Belemnite*, which possessed a phragmocone having the apical part implanted in the cavity or alveolus of a guard or osselet, which in its original state resembled in substance the sepiostaire of the Cuttle-fish, but is generally found mineralized by calcareous spar; and the peristome, possessing two or more elongated shelly processes; both the guard and the phragmocone being invested with a corneo-calcareous capsule or receptacle. He observes, lastly, that the body and other soft parts of the cephalopod of the Belemnite are at present unknown. The author's communication was illustrated by drawings, and accompanied by the specimens above described.

March 30, 1848.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

Professor Ritter, of Berlin, and M. Milne Edwards, of Paris, were elected Foreign Members.

"Chemical Researches on the Nature of Wax." By Benjamin Collins Brodie, Esq. Communicated by Sir Benjamin Collins Brodie, Bart., F.R.S.

It is known that bees'-wax is separable, by means of boiling water, into two portions: to the one, which is more soluble in alcohol than the other portion, the name of *Cerin* has been given: the residuary portion, which does not dissolve, has been termed *Mycicin*. In this paper the author gives an account of his investigation of the properties of the former of these substances, namely Cerin.

This substance has been represented by certain chemists in France, M. Lewy and M. Gerhardt, as being convertible by oxidation into the stearic acid, and as being a substance which stands with respect to that acid in the remarkable relation of an aldehyde. These views the author believes are incorrect; and he states that no pure chemical substance was procured by these chemists from cerin, and that the

substance of which the greater part of the cerin consists is no aldehyde, but a hydrated acid, existing as such in bees'-wax.

The acid is best prepared by precipitation from the alcoholic solution of the cerin by an alcoholic solution of acetate of lead, and subsequent separation and precipitation of the acid by methods described in the present paper. When purified, the acid is a white brittle body, of a crystalline appearance, melting at from 79° to 80° C. The formula of the acid is $C_{54}\ H_{54}\ O_4$, a formula which was determined by the analysis of the silver salt having the constitution $C_{54}\ H_{53}\ O_3 + AgO$, and of the compound ether $C_{58}\ H_{58}\ O_4 = C_{54}\ H_{53}\ O_3 + C_4\ H_5\ O$. The acid is volatile: it was analysed after distillation; and it was also procured from the wax itself in a pure state by simple processes of crystallization. To this acid the author gives the name of *Cerotic acid.*

By the action of chlorine, the wax acid is converted into a substance having all the appearance of a gum-resin; a change analogous to which may be effected in various other wax substances examined by the author. It has still the characters of an acid, and has the formula $C_{54}\left\{\begin{matrix}H_{42}\\Cl_{12}\end{matrix}\right.O_4$, a formula which is confirmed by that of the compound ether $C_{58}\left\{\begin{matrix}H_{46}\\Cl_{12}\end{matrix}\right.O_4$. The analyses of these substances are given.

When distilled in a pure state, the cerotic acid is volatile. When mixed with other waxy matters, however, it passes by distillation entirely into volatile oils, a circumstance which accounts for the fact that it has never been dissolved in the wax distillate. By precipitating a weighed quantity of wax by acetate of lead, the quantity per cent. of the cerotic acid in the bees'-wax, namely 22, was determined.

This acid was present in all the European bees'-wax examined by the author; but suspecting that its quantity might vary in other instances, he procured bees'-wax from Ceylon, formed under different conditions of climate and vegetation, and found on examination that there was a total absence of the acid in that specimen. The author draws attention to this curious variation in the nature of an animal secretion under different conditions of life, a variation of which we have another example in that of the volatile acid of butter, discovered by Leich; namely, that the butyric and caproic acid of one season were, in another, replaced by vaccinic acid, differing from the former acids in the amount of oxygen alone.

"A statement of the working of the Compasses on board the Honorable East India Company's Iron Steamer Pluto, from September 1841, on her passage from England to China, and during her service in those seas, until her arrival at Calcutta in January 1843." By John Tudor, Commander R.N. Communicated by S. Hunter Christie, Esq., Sec. R.S., &c.

The author states that the compasses of the Pluto were adjusted by Mr. Sims, of the firm of Troughton and Sims, by order of Mr.